

### **REMARKS**

In view of the above amendments and following remarks, reconsideration of the rejections contained in the Office Action of November 1, 2005 is respectfully requested.

The Examiner's rejection of claims 44-48 has been rendered moot by the above amendments to the claims. The claims now reference the diameter of the polishing table to the diameter of the lower surface of the substrate carrier. Specifically, claims 44 and 48 recite that the diameter of the polishing table is substantially 1.5 times the diameter of the lower surface of the substrate carrier.

As can be seen, for example, from Fig. 4, the substrate carrier carrying the wafer W has a lower surface that is substantially the same size as the wafer. Paragraph 57 of the specification indicates that the present invention makes it possible to reduce the diameter of the polishing surface to one that is half of the conventional size, i.e. 1.5 times the diameter of the substrate. Thus the specification clearly supports the limitation that the diameter of the polishing surface is substantially 1.5 times the diameter of the lower surface of the substrate carrier. Accordingly, these new claim limitations clearly do not represent new matter, but simply represent a different way of presenting the same limitation as previously presented. The specification has been amended to ensure literal correspondence between the specification and claims.

In the Advisory Office Action of February 17, 2006, the Examiner acknowledged that the view of Fig. 4 shows a carrier with a lower surface substantially that of the wafer. However, the Examiner indicated that it did not show a table no greater than 1.5 times the diameter of the lower surface of the substrate carrier. However, as noted above, paragraph 57 of the specification discusses how the present invention allows a substrate diameter of 200 mm to be polished with a table of 300 mm, i.e. 1.5 times the diameter of the substrate, and thus the lower surface of the substrate carrier.

Accordingly, it may be seen that the Examiner's rejection of claims 44-48 has been rendered moot by the above amendments.

The Examiner further rejected claims 36-43 as being unpatentable over Lenkersdorfer U.S. 6,213,844 in view of Watanabe et al. and Osterheld. Lenkersdorfer was considered to disclose the majority of the limitations of the claims, with Osterheld being cited for the proposition of a water

nozzle for rinsing the pad and Watanabe cited for the proposition of controlling the attitude of the top ring.

All of claims 36-38, however, as well as claims 42 and 43, now stand as canceled. Accordingly, claims 40 and 41 remain as rejected over the prior art cited by the Examiner.

In response to Applicants' previous arguments, the Examiner noted that Lenkersdorfer was considered to include structure and elements capable of performing the recited functions in the claims. However, contrary to the position of the Examiner, it is respectfully submitted that the claims, particularly as now amended, clearly set forth structural aspects that are not found in the cited references.

That is, the polishing position recited in the claims is a structural aspect of the claims. The claims now recite that the substrate carrier is positioned such that a portion of the lower surface of the substrate carrier extends radially outwardly of the outer peripheral portion of the polishing table in the polishing position. Further, the thickness measurement device, recited as being positioned at the outer peripheral portion of the polishing table so as to be positioned below the substrate carrier, is recited as doing so when the substrate is in the polishing position. These structural aspects of the claim are recited in a structural form and not as functional expressions. As such, they clearly distinguish over Lenkersdorfer and the secondary references cited by the Examiner.

Thus, the positional relationship between the substrate carrier, the polishing table and the thickness measurement device in the polishing position is defined. With such arrangement, because the polishing of the substrate can be performed while maintaining the substrate under an overhanging condition, or partially extending the substrate outwardly of the outer peripheral portion of the polishing table, it is possible to reduce the diameter of the turntable and thus reduce the size of the polishing apparatus. This advantage has been previously discussed, we note.

Further, because the thickness measurement device is arranged as recited in each of the independent claims, the thickness measurement can be performed during polishing of the substrate. Thus, a real time measurement can be performed that considerably reduces the time and operation that is required in the polishing apparatus.

The limitations of claim 40 define a positional relationship between the claimed elements and a basic operating condition of the apparatus. It is apparent that these limitations define features in the construction of the apparatus. They do not define features that are operational, functional or related to a method. Rather, they define a structural relationship. The defined structural relationship clearly distinguishes over the cited references, in particular Lenkersdorfer.

By having the thickness measurement device positioned in an outer peripheral portion at a position below the substrate carrier when the substrate carrier is holding the substrate in the polishing position, thickness measurement can be performed during polishing of the substrate. Accordingly, real time measurement can be performed, which considerably reduces the time and operation that is required in the polishing apparatus.

Further, because the polishing of the substrate can be performed while maintaining the substrate under an overhanging condition, it is possible to reduce the diameter of the turntable and thus reduce the size of the polishing apparatus overall.

As has been previously explained, such aspects are not disclosed or suggested by any of Lenkersdorfer, Watanabe or Osterheld.

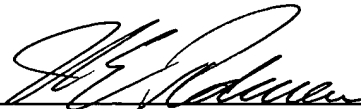
Furthermore, claims 44, 47 and 48 further distinguish over the references cited by the Examiner by reciting that the diameter of the polishing table is no more than substantially one and a half times the diameter of the lower surface of the substrate carrier. It is accordingly possible to substantially reduce the diameter of the turntable and thus reduce the size of the polishing apparatus. As discussed in paragraph 57 of the specification, in a conventional polishing apparatus, the diameter of the turntable was about three times the diameter of the wafer. However, with the present invention, because the wafer is always maintained under an overhanging condition throughout polishing, it is possible to reduce the diameter of the polishing table to about 1.5 times the diameter of the wafer. This further clearly distinguishes over each of the references cited by the Examiner.

From the above, it is respectfully submitted that the above amendments clearly serve to place the application into condition for allowance. As such, entry of the above amendments is submitted to be in order. Accordingly, entry of such amendments and allowance of the application as a whole is respectfully requested.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance, and the Examiner is requested to pass the case to issue. If the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact Applicants' undersigned representative.

Respectfully submitted,

Norio KIMURA et al.

By: 

Nils E. Pedersen

Registration No. 33,145

Attorney for Applicants

NEP/krp  
Washington, D.C. 20006-1021  
Telephone (202) 721-8200  
Facsimile (202) 721-8250  
May 1, 2006